

AMENDMENTS TO THE CLAIMS:

Please amend the Claims as follows:

1. (Currently Amended) An image sensor comprising:

a pixel array, comprising at least one row of pixels, each pixel having a light receiving element and a reset switch connected to a reset node of said light receiving element, divided into an effective pixel region and an optical black pixel region; and

a read-out circuit, scanning on said pixel array to read out signals from said pixels, including a black clamp circuit for holding ~~[[an]]~~ a signal from said optical black pixel region as an integrated dark current signal and for correcting ~~[[an]]~~ a signal from said effective pixel region with said integrated dark current signal,

wherein said optical black pixel region comprises a potential averaging line ~~commonly~~ wiring directly connected to said reset nodes of a plurality of pixels in a pixel row.

2. (Currently Amended) The image sensor of claim 1, wherein pixels including said potential averaging line ~~wiring~~ are located outside of said effective pixel region in a horizontal scanning direction, and line clamp is performed by said black clamp circuit.

3. (Withdrawn) The image sensor of claim 1, wherein said pixel array comprises a plurality of pixels arranged in rows and columns, pixels including said

potential averaging line are located outside of said effective pixel region in a vertical scanning direction, and frame clamp is performed by said black clamp circuit.

4. (Withdrawn) The image sensor of claim 3, wherein said potential averaging lines in a plurality of pixel rows are connected to each other, and said reset switch is commonly connected to said potential averaging lines.

5. (Withdrawn) The image sensor of claim 1, wherein said pixel array comprises a plurality of pixels arranged in rows and columns, and each column comprises a vertical bus line coupled to pixels of this column in order to read out an signal from a pixel of selected row,

wherein said read-out circuit further comprises a correlation double sampling circuit for each column, said correlation double sampling circuit is coupled between said vertical bus line of this column and said black clamp circuit.

6. (Withdrawn) An image sensor comprising:
a pixel array, comprising a plurality of pixels, each pixel having a light receiving element;
a read-out circuit, scanning on said pixel array to read out signals from pixels; and
a control circuit, repeating sequential operation of a light integration period, a read-out period and a power-off period,
wherein said control circuit:
in said light integration period, causes said pixel array to perform light integration without supplying power to said read-out circuit;

in said read-out period, causes said read-out circuit to read out said signals; and
in said power-off period, ceases to supply power to said pixel array and said read-out circuit.

7. (Withdrawn) An image sensor comprising:
a pixel array, comprising a plurality of pixels, each pixel having a light receiving element;
a vertical scanning circuit, serially activating rows of said pixel array to read out signals from pixels of an activated row;
sample and hold circuits, sampling signals from the pixels of activated row and holding them;
a horizontal scanning circuit, serially activating said sample and hold circuits to read out a held signal from an activated sample and hold circuit on to a horizontal bus;
an amplifier circuit, amplifying a signal on said horizontal bus or said signals read out from said pixels of said activated row; and
a control circuit, repeating sequential operation of a light integration period, a read-out period and a power-off period,
wherein said control circuit:
in said light integration period, causes said pixel array to performs light integration for at least one frame period without supplying power to said sample and hold circuits and said horizontal scanning circuit;
in said read-out period, causes said vertical scanning circuit, said sample and hold circuits, and said horizontal scanning circuit to operate for one frame period; and

in said power-off period, ceases to supply power to said pixel array, said vertical scanning circuit, said sample and hold circuits, said horizontal scanning circuit and said amplifier circuit. for at least one frame period.

8. (Withdrawn) An image sensor comprising:

a pixel array, comprising a plurality of pixels, each pixel having a light receiving element;

a read-out circuit, scanning on said pixel array to read out signals from pixels; and

a control circuit, repeating sequential operation of a light integration period and a read-out period, wherein said control circuit:

in said light integration period, causes said pixel array to perform light integration without supplying power to said read-out circuit; and

in said read-out period, causes said read-out circuit to read out said signals.

9. (Withdrawn) An image sensor comprising:

a pixel array, comprising a plurality of pixels, each pixel having a light receiving element;

a vertical scanning circuit, serially activating rows of said pixel array to read out signals from pixels of an activated row;

sample and hold circuits, sampling signals from the pixels of activated row and holding them;

a horizontal scanning circuit, serially activating said sample and hold circuits to read out a held signal from an activated sample and hold circuit on to a orizontal bus;

an amplifier circuit, amplifying a signal on said horizontal bus or said signals read out from said pixels of said activated row; and

a control circuit, repeating sequential operation of a light integration period and a read-out period,

wherein said control circuit:

in said light integration period, causes said pixel array to performs light integration for at least one frame period without supplying power to said sample and hold circuits and said horizontal scanning circuit; and

in said read-out period, causes said vertical scanning circuit, said sample and hold circuits, and said horizontal scanning circuit to operate for one frame period.

10. (Withdrawn) An image sensor comprising:

a pixel array, comprising a plurality of pixels, each pixel having a light receiving element;

a vertical scanning circuit, serially activating rows of said pixel array to read out signals from pixels of an activated row;

sample and hold circuits, sampling signals from the pixels of activated row and holding them;

a horizontal scanning circuit, serially activating said sample and hold circuits to read out a held signal from an activated sample and hold circuit on to a horizontal bus;

an amplifier circuit, amplifying a signal on said horizontal bus or said signals read out from said pixels of said activated row; and

a control circuit, repeating sequential operation of a

light integration period and a read-out period,

wherein said control circuit:

in said light integration period, causes said pixel array to performs light integration for one frame period without supplying power to said sample and hold circuits and said horizontal scanning circuit; and

in said read-out period, causes said vertical scanning circuit, said sample and hold circuits, and said horizontal scanning circuit to operate for at least one frame period.